

Notice of Allowability

Application No.

10/583,870

Examiner

Cindy D. Khuu

Applicant(s)

HIKIDA ET AL.

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to ____.
2. ☒ The allowed claim(s) is/are 1-15.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 9/10, 7/31 & 3/16/07
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date ____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ____.

DETAILED ACTION

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given by Mr. John Romary during a telephone interview on 01/07/08.

This Examiner's Amendment was made to correct for minor informalities.

The application has been amended as follows:

The abstract has exceeded the 150 words in length. Replace the abstract with:

-- An azimuth measuring device is provided that can obtain offset information when the direction of the azimuth measuring device is arbitrarily changed. The offset information is calculated based on coordinates of a reference point obtained by a reference point estimating system. The azimuth measuring device can obtain the offset information without obtaining erroneous offset information when changing direction. --

In Claim 2:

Line 1; replace "whrein" with -- wherein --.

In Claim 13:

Line 2; replace "magnetsim" with -- magnetism --.

Pertinent Art Cited

The following US Patent Applications reveal the current state of the art:

Hikida et al. (US 7,177,779) teach of an azimuth measuring device (fig. 2) comprising:
triaxial (3-axis) earth magnetism detecting means (11) for detecting earth magnetism (column 2, lines 35-36);

output data obtaining means (17) for repeatedly obtaining triaxial output data not smaller than a predetermined number of times, the triaxial output data being obtained from the earth magnetism detecting means at a time when the direction of the earth magnetism detecting means changes in a three dimensional space (column 2, lines 40-43);

reference point estimating means (18) for estimating, using a statistical method, coordinates of a position where variation of distances from a group of triaxial output data obtained by the output data obtaining means is minimum in a three dimensional space in which the triaxial output data are placed by relating the values of the triaxial output data to the direction components of the respective axes, and for setting the coordinates which are estimated to as a reference point (column 2, lines 43-52); and

offset information calculating means (18) for calculating offset information of output data from the earth magnetism detecting means based on coordinates of the reference point obtained by the reference point estimating means (column 2, lines 52-55).

However, Hikida does not teach at least an azimuth measuring device comprising: plane determining means for determining whether a group of output data obtained by the output data obtaining means are distributed in the vicinity of a specific plane, wherein when it is determined by the plane determining means that the group of output data are distributed in the vicinity of the specific plane, the coordinates of the reference point are not estimated by the reference point estimating means, or the coordinates of the reference point estimated by the reference point estimating means are deleted.

Allowable Subject Matter

Claims 1-15 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claim 1 is the inclusion of the limitation "wherein when it is determined by the plane determining means that the group of output data are distributed in the vicinity of the specific plane, the coordinates of the reference point are not estimated by the reference point estimating means, or the coordinates of the reference point estimated by the reference point estimating means are deleted".

The primary reason for the allowance of claim 6 is the inclusion of the limitation "temporary reference point estimating means for estimating, using a statistical method, coordinates of a position where variation of distances is minimum on the reference plane obtained by the plane estimating means, the distances being those from a group of projected points where a group of triaxial output data obtained by the output data obtaining means are projected on the reference plane, and for setting the coordinates which is estimated as a temporary reference point".

The primary reason for the allowance of claim 13 is the inclusion of the limitation "reference point correcting means for correcting a temporary reference point obtained by the temporary reference point estimating means, and for setting the temporary reference point which is corrected as a reference point".

The prior art of record, taken alone or in combination, fails to disclose or render obvious.

Claims 2-5, 7-12 and 14-15 are allowed due to their dependency on claims 1, 6 and 13.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cindy D. Khuu whose telephone number is (571) 272-8585. The examiner can normally be reached on M-F, 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system; see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CMU 1/8/08


John Barlow
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